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GENERAL INFORMATION

# Coal Mine Fatal Accident 2003-14

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|---|---|
| Operator: | Calvary Coal Co. Inc. |
| Mine: | Mine No. 4 |
| Date: | June 9, 2003 |
| Classification: | Machinery |
| Location: | District 7, Leslie Co., Kentucky |
| Mine Type: | Underground |
| Employment: | 47 |
| Production | 114,108 tons |

OVERVIEW

# Coal Mine Fatal Accident 2003-14

- The A 49-year old mine manager (victim) with 29 years mining experience and three other miners were dismantling Pemco electrical substation.
- The victim was operating a Simon-Telelect 42-foot aerial bucket truck, from within the elevated bucket, which was attached to the steel I-Beam structure of the substation by a winch (JIB Crane) and nylon rope assembly.
- When the mine manager used the winch (JIB Crane) to lift the steel structure, the nylon rope broke causing the aerial bucket to move upward suddenly throwing the mine manager out of the bucket.
- The mine manager, who was not wearing a safety belt or harness, fell 29 feet to the ground causing fatal injuries.

ACCIDENT DETAILS

# Coal Mine Fatal Accident 2003-14


- The substation had been moved to the parking area on Saturday for dismantling and transport.
- Miners had gone to the parking area to remove the steel structure from the Pemco electrical substation.
- The structure consisted of several 6-inch steel I-Beams, 1 steel plate, and 20 large insulators and measured 21’-10 ½” tall by 9’-6” wide.

ACCIDENT DETAILS

## Coal Mine Fatal Accident 2003-14

- The mine manager elevated the bucket and placed a nylon winch rope around the top beam of the steel structure, placing its hook back around the rope.
- The structure was freed from the substation.
- The mine manager used the winch (JIB Crane) to lift upward on the steel structure, which bent the I-Beam.

ACCIDENT DETAILS

# Coal Mine Fatal Accident 2003-14

- The nylon rope failed at the point where it contacted the edge of the steel beam, causing the aerial bucket to move upward suddenly throwing the victim backwards out of the bucket.
- As he fell to the ground, the victim struck the steel structure several times and the bumper of the aerial bucket truck.

PHYSICAL FACTORS

## Coal Mine Fatal Accident 2003-14

- The bucket truck consisted of a 1991 Model T-4042 Simon-Telelect aerial device with a Model F800 Ford truck chassis.
- The aerial device was designed to be used around energized electric lines.
- The boom on the aerial device had a reach of 42'.
- The maximum lifting capacity of the jib crane was 2,000 pounds. Its safe lifting capacity decreases when the boom is at a more horizontal angle.
- The upper boom arm position was estimated to be less than 30 degrees above horizontal. In this position its maximum safe load was approximately 700 pounds.
- The weight of the steel structure being lifted at the time of the accident was approximately 4,000 pounds.

PHYSICAL FACTORS

## Coal Mine Fatal Accident 2003-14

- The rope that failed during the accident was estimated to have a breaking strength of 10,500 pounds and a working strength of 2,100 pounds
- Using the rope as a choker hitch reduces the recommended working capacity of the sling by 20 %. The rope was run through the hook close to the top of the beam, reducing its working capacity by another 20% (ANSI Standard B30.9)

PHYSICAL FACTORS

## Coal Mine Fatal Accident 2003-14

- The victim was not wearing a safety belt at the time of the accident.
- A lanyard was provided in each of the buckets for attachment of a safety belt.
- The operator's manual stated that a safety belt should be used at all times when operating the bucket truck from the bucket.

# ROOT CAUSE ANALYSIS

- *Causal Factor:* A suitable hitch or sling was not used to lift the steel I-Beam structure.
- *Corrective Action:* Mine Management should issue policy that ensures the use of a suitable hitch or sling when lifting heavy loads.

**Coal Mine Fatal Accident 2003-14**

# ROOT CAUSE ANALYSIS

- *Causal Factor:* A safety belt or harness was not used while operating the aerial bucket.
- *Corrective Action:* Policies and procedures should be enforced to ensure that employees use safety equipment.

# ROOT CAUSE ANALYSIS

- *Causal Factor:* The aerial bucket was used to lift a load which exceeded its rated capacity.
- *Corrective Action:* Mine Management should issue policy that equipment be used only in accordance with manufacturer's suggested recommendations.

**Coal Mine Fatal Accident 2003-14**

# CONCLUSION

- The fatality occurred because the aerial device was used to lift a load which exceeded its capacity.
- The rope used to lift the load was attached without a suitable hitch or sling.
- A safety belt or harness was not used to keep the operator from falling from the aerial bucket.

# ENFORCEMENT ACTIONS

- 104(d) (1) Citation for a violation of 30 CFR 77.1710 (g): The operator of the mine failed to require employees who were raised in the aerial bucket to wear safety belts or harnesses.

- 104(d) (1) Order for a violation of 30 CFR 77.210(a): The mine operator failed to use a suitable hitch or sling when vertically hoisting/lifting a 4,016 pound steel structure.

- 104(d) (1) Order for a violation of 30 CFR 77.404(a): The Simon Telelect aerial bucket was used to lift a load which exceeded its rated capacity.

# BEST PRACTICES

- Use appropriate fall protection, including safety harnesses and safety lines, where there is a danger of falling.
- Use equipment for its intended purpose and within the design specifications of the manufacturer.
- Conduct pre-operational checks on equipment prior to operation and ensure that outriggers and equipment are ready for intended use.
- Size ropes/slings for maximum load applications and protect them from being cut when a load is applied.
- Ensure that all workers are properly trained in the task to be preformed, such as hoisting, rigging, equipment design capabilities, etc.

**Coal Mine Fatal Accident 2003-14**